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PERFORMANCE REPORT
SURVEYS AND INVESTIGATIONS PROJECTS

As Required By
FEDERAL AID IN WILDLIFE RESTORATION ACT

MISSOURI

Federal Aid Project No. W-13-R-33 (1979)

STUDY NO. II: White-tailed Deer Population Measurement, Harvest Analysis
and Season Recommendations

Job No. 2: Deer harvest and hunter pressure analysis

Job No. 3: Deer season recommendations

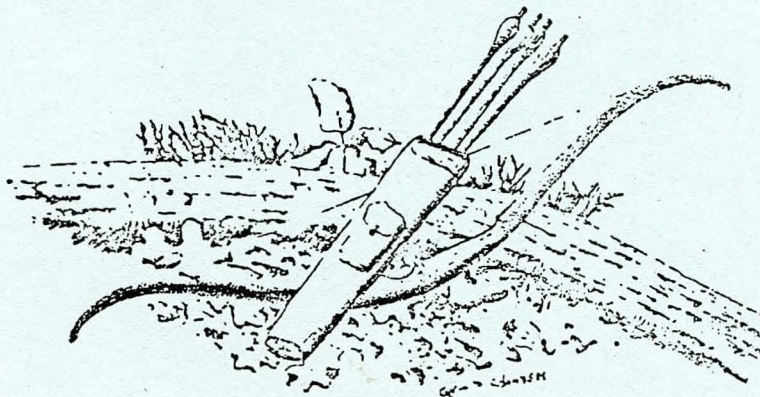
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P-R Coordinator

October 24, 1979

Bill T. Crawford, Supt.
Wildlife Research Section

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PERFORMANCE REPORT
SURVEYS AND INVESTIGATIONS PROJECTS

STATE OF MISSOURI

Project No. W-13-R-33 (1979)

Study No. II

Jobs 2 & 3

Study No. II: White-tailed Deer Population Measurement, Harvest Analysis
and Season Recommendations

Job No. 2: Deer harvest and hunter pressure analysis

Job No. 3: Deer season recommendations

ABSTRACT

Job No. 2 -- Harvest data were collected at mandatory and biological checking stations and from a post-season mail survey. Regulations were set and data analyzed according to a Management Unit system of zoning. Total firearms permit sales decreased 1.4 percent in 1978. During the nine-day season, an estimated 232,580 hunters harvested 40,261 deer. The season provided 1,039,916 trips. Statewide, total harvest increased 10.1 percent. Where used, bucks-only and the quota system satisfied objectives. Delayed either-sex hunting successfully restricted harvest pressure on females in other units. Archery permit sales increased 3.4 percent. During the 83-day season, 34,368 archers harvested 2,781 deer.

Biologists examined 3,690 deer at 19 check stations during the 1978 Missouri deer season. Sex and age data and physical measurement information are presented.

Job No. 3 -- Recommendations for 1978 seasons were based on 23 units.

PERFORMANCE REPORT
SURVEYS AND INVESTIGATIONS PROJECTS

STATE OF MISSOURI

Project No. II: White-tailed Deer Population Measurement, Harvest Analysis, and Season Recommendations

Job No. 2: Deer harvest and hunter pressure analysis

Objective: To determine annual deer harvest and hunter pressure information.

Procedure: Statewide deer harvest data were obtained at mandatory checking stations, biological checking stations and a statistically designed post-season mail survey of deer hunters. Mandatory checking stations provide accurate county and regional sex-specific kill data. Biological stations provide a sample of sex and age distribution and physical measurements. The mail survey provides hunter distribution and pressure data.

The mail survey was conducted from a 6.1 percent random sample of 1978 firearms permittees. Permit booklets included an address card which was completed by the permit vendor when the first permit in each booklet was sold. Booklets contained 10 permits for a potential sample of 10 percent. Approximately 22,000 of 25,000 potential address cards were available when the sample was prepared. The address reservoir then was randomly reduced by computer to 15,015.

Address cards were machine punched with serial numbers to allow use of finder cards in removing respondents from the address deck in follow-up mailings. Questionnaire forms were printed on continuous card stock and addressed, including serial numbers, by IBM machine for each of three mailings. Questionnaires were enclosed with a letter of transmittal appropriate for each mailing.

The first mailing of 15,015 questionnaires was made March 22, 1978. Follow-up mailings to non-respondents were made April 23 and June 7. First class mail was used and 3-4 days were required for preparation of each mailing. Questionnaire forms were returned via business reply permit printed on the back. Usable forms were coded and data punched on IBM data cards.

Response totaled 69 percent of deliverable questionnaires. Accumulated total of non-deliverable questionnaires was 1,488 (9.9 percent of mailout).

Acknowledgment is made to Dr. Gary F. Krause, Prof. of Agronomy and Statistics (University of Missouri, Columbia) for statistical consultation. Data results were obtained through the use of the University of Missouri Computer Center. Steve Sheriff, Biometrician, designed and conducted computer analyses.

Discussion:

Statewide Firearms Season

The 1978 firearms deer season was 9 days in length (Nov. 18-26). The season opened on a Saturday and included two weekends. Regulations were set according to 23 Management Units (Fig. 1). Four basic season types were used: 1-day delayed any-deer, 4-day delayed any-deer, bucks-only, and quota system.

The 1978 season was greatly influenced by weather. Substantial acreages of crops were unharvested in agricultural areas because of wet field conditions. Rain or snow conditions were present both weekends during the season.

Hunting Pressure

Summary of hunting pressure for 1978:

1. Hunters decreased 4.3 percent and trips decreased 6.3 percent.
2. Hunters averaged 4.5 days of hunting, compared to 4.5 in 1977 and 4.6 in 1976.
3. 38 percent of all hunting was done opening weekend and 24 percent closing weekend, similar to 1977.
4. The highest number of hunters afield was 204,205 on opening day. The lowest was 64,192 on the 5th day (Wednesday).

Total firearms permit sales were 246,803 in 1978, a decrease of 1.0 percent (Table 1). Resident permit sales increased 2.7 percent to 240,149. A major decrease in non-resident permit sales occurred, -59 percent, with sales totaling 6,654. Increased fees and quotas on non-residents in northern units were responsible for the decrease. Distribution of non-resident hunters showed higher concentrations in northern Missouri than elsewhere, although densities were much lower than previous years (Figures 2 and 3) with the non-resident to resident ratios close to our objective. Non-resident quotas were generally well accepted.

A detailed summary of hunting pressure statewide and by Management Unit is presented in Appendix A. Forested land figures used to approximate deer range were taken from a cover map of Missouri that was prepared from LANDSAT photography by Forestry Division in the summer of 1977.

The average number of days hunted in 1978 was similar to other years when delayed either-sex seasons were in effect (Table 2). Statewide, hunters averaged 4.5 trips compared to 4.5 in 1977 and 4.6 in 1976. Hunting activity by day was highest opening weekend although a secondary peak occurred the second Saturday, especially in either-sex units (Table 3). Activity by day was similar to the period 1972-73 and 1976-77 when delayed either-sex seasons occurred (Table 4). Statewide, 38 percent of hunting occurred opening weekend and 24 occurred closing weekend, similar to 1976 and 1977 (Table 5).

Discussion (cont'd):

Statewide, 88 percent (204,205) of the hunters were afield opening day (Table 6), compared to 89 percent in 1977 and 88 percent in 1976. Greatest opening day pressure occurred in quota units and least in 4-day any-deer units. Wednesday was the day of least activity when 28 percent (64,192) of the hunters participated.

Hunters accumulated 1,044,284 trips (Table 7) a decrease of 4.3 percent over 1977. Projected number of permittees who actually hunted was 232,580, a decrease of 4.3 percent.

Hunters sampled in the 1978 mail survey were asked if they wore an outer garment of hunter orange during the 1978 firearms season. Ninety-four percent of the respondents indicated that they did wear hunter orange. There was no significant difference in the percentage of successful vs. unsuccessful hunters that wore hunter orange (Table 8).

Hunters were also asked to record the number of hunters seen afield that were not members of their own party. Hunters encountered a statewide average of 7.2 other hunters during the season. There was not a good correlation ($r = 0.306$) between the average number of hunters seen and the number of hunters per square mile of forest (mail survey data). Nor was there a good correlation ($r = 0.128$) between the average number of hunters seen and the number of hunters estimated to be in a given region (Table 9).

Summary of the 1978 firearms deer harvest:

1. Harvest increased 10 percent from 1977, and was 14 percent higher than the 1970-77 average. It was the third largest harvest on record.
2. Statewide female harvest decreased 7 percent.
3. Total harvest was 40,261; 9,915 females (25 percent) and 30,346 males (75 percent).
4. 54 percent of the harvest occurred opening weekend while 22 percent occurred closing weekend.
5. Statewide hunter success was 15.0 percent, and among Management Units ranged between 1.1 percent in Unit 23 to 37.0 percent in Unit 5.

The 1978 firearms deer harvest of 40,261 (check station) increased 10 percent from 1977 and was 14 percent above the 1970-77 average and was the third largest harvest on record. An even greater harvest was expected, but unfavorable weather and unharvested crops caused lower hunter success. Distribution of the 1978 harvest by county is shown in Figure 4 and by Management Unit in Appendix B.

Discussion (cont'd):

Female harvest statewide decreased 7 percent from 1977 and was 7.6 percent below the 1970-77 average. Percentage of females in the statewide harvest was 25 (Table 10). Females composed highest portions of the harvest in Units 4 and 5 where seasons were the most liberal. Female composition in the harvest reflected management strategy.

Male harvest statewide increased 17 percent and was 24 percent higher than the 1970-77 average (Appendix C). The number of antlered males harvested in 1978 was up slightly (28 percent higher than the 1970-77 average), according to mail survey responses (Table 10). Antlered males composed 67 percent of the 1978 harvest, compared to 59 percent in 1977, 63 percent in 1976 and 51 percent in 1975 when either-sex hunting was liberalized.

The 1978 harvest peaked both weekends with lower levels on weekdays (Table 11). Highest opening day percentage occurred in units having season-long bucks-only regulation while lowest occurred in units having a delayed either-sex regulation. Statewide, 33.7 percent of the harvest occurred opening day, compared to 31 percent in 1977 and 29 percent in 1976 (Table 12). Fifty-four percent of the harvest occurred opening weekend and 22 percent closing weekend (Table 13).

Hunter success statewide was 15.0 percent (Appendix B) compared to 13.2 percent in 1977, 16 percent in 1976 and 21 percent in 1975. Success was highest in Unit 5 (37.0 percent) and Unit 4 (29.2 percent). Statewide hunter success was highest opening day, peaking again on the second Saturday (Table 14). Daily success was highest opening day in bucks-only and quota units. In delayed any-deer units, success was highest on the second Saturday.

Quotas of antlerless deer permits were issued in 8 Management Units. This system has been successful in controlling female harvest. Actual female harvests have averaged 8 percent below predicted levels since the quota system was first implemented in 1974. Recommended and actual female harvests for 1978 are indicated below. Units 9 and 11 had desired female harvests of 150 and 60, respectively. No quotas were set for these units because expected female harvests by farmers exceeded these numbers. Actual female harvests, however, were 85 and 33, respectively (Table 15).

Management Unit	FEMALE HARVEST	
	Recommended	Actual
8	275	211
10	2345	1821
12	700	613
13	535	319
14	355	503
15	570	142
16	320	387
18	160	74

Discussion (cont'd):

The 1978 harvest was lower than expected primarily because of poor weather conditions. The objective of restricting harvest pressure on females was met. Heavy hunting pressure still occurs on the Saturday opening, even when restrictive, bucks-only seasons are present. Harvest has been manipulated by various regulations, but opening day pressure has not been relieved by the season arrangements used in recent years.

Discussion By Management Unit

A Management Unit system of zoning was first used in Missouri in 1970 when 10 units were established. Between 1970 and 1977, two units were split and minor boundary adjustments were made. It was apparent, however, that major revision was necessary because of increasing hunter pressure and habitat loss.

A forest cover map of Missouri was prepared from LANDSAT photography by Forestry Division in summer, 1977. This cover map was used as the basis for 23 new Management Units. Major highways served as boundaries wherever possible. Department personnel (primarily enforcement) in all regions of the state were then consulted to obtain their advice and comments on the proposals. A number of boundary adjustments were made although the 23 units were retained (Figure 1). Percentages of forest cover by unit will be calculated during 1979. Regulations for 1978 were established using these 23 units.

Four basic season strategies were recommended within a 9-day season framework (November 18-26): bucks-only, one-day delayed any-deer, four-day delayed any-deer, and quotas on any-deer permits (Figure 1). Bucks-only seasons were recommended in Units 1,6,7,17,19 and 23 because of limited habitat or depleted deer populations. One-day delayed either-sex seasons were recommended in Units 2,3,20,21 and 22 where continued herd growth was desirable. A four-day delayed either-sex season was recommended for Units 4 and 5 to stabilize herd growth. Quotas of any-deer permits were recommended for remaining units for more precise control of female harvest.

Quotas on non-resident hunters were recommended for Units 2,3,4 and 5 because of their disproportionately high numbers in these areas. Quotas were calculated to reduce their numbers by approximately two-thirds. This reduction would result in a ratio of non-resident to resident hunters of approximately 1:18, similar to other areas in the state where no problem with excessive numbers of non-resident hunters was apparent. Quotas on non-residents were:

Unit	Non-Resident Hunter Quota
2	340
3	360
4	480
5	680

Discussion (cont'd):

Units 1,6,7,17,19,23: Bucks-only, November 18-26

Habitat deficiencies exist in units 1,6,7,17 and 23. Populations need added protection from excessive harvest because of limited habitat base. Low deer populations are present in Unit 19. Alternating years of any-deer and bucks-only have been used as management in recent years to rebuild depleted herds.

Sixty-six percent of the harvest in these units occurred during the opening weekend, although only 38 percent of total hunting activity took place the first two days. These units had a nearly average number of hunters per square mile of forest - 6.7 compared to a state average of 7.2.

Units 2,3,20,21,22: Bucks-only, November 18-24 and November 26
Any-deer, November 25

Populations in Units 2 and 3 have apparently responded well to conservative seasons in recent years. Potential for overharvest exists in this lightly forested region necessitating a restrictive any-deer season. Low populations exist in Units 20,21, and 22. Restrictive one-day either-sex seasons should allow herd growth to occur. In-season illegal kill of females is reported to be high in this area, especially in Units 21 and 22 (according to Agents and mail survey respondents). If populations do not respond to restrictive seasons we may recommend complete season closure in those two units in the near future.

These units received slightly more hunting pressure than the state average - 7.9 hunters per square mile of forest. Forty-nine percent of the harvest in these units occurred during the opening two days, and 32 percent on the one any-deer Saturday.

Non-resident hunter quotas were set at 340 and 360 for Units 2 and 3, respectively. Mail survey data showed that Unit 2 had 4.9 percent non-residents, and that Unit 3 had 4.4 percent. The quota system on non-residents worked effectively during its first year, and was generally well received.

Units 4,5: Bucks-only, November 18-22; Any-deer, November 23-26

Deer populations have been high in this area for the past several years, even with fairly liberal seasons. Crop damage continues and highway mortality increased substantially in recent years.

Sixty percent of the harvest in these units occurred during the any-deer portion of the season when 44 percent of the hunting activity occurred. Thirty-seven percent (3312) of the harvest in these units was composed of does. Approximately 68 percent of these were adults.

Non-resident quotas for Units 4 and 5 were 480 and 680, respectively. 4.4 percent of the hunters in Unit 4 and 6.1 percent of the hunters in Unit 5 were non-residents. Scotland Co. in Unit 5 had 13 percent non-residents; the highest percentage in the state.

Discussion (cont'd):

Units 8,9,10,11,12,13,14,15,16,18: November 18-26 Bucks-only with quota of any-deer permits

The quota system is our best management tool. Much of the land area within the units listed above was managed by quotas under the former Management Unit system. Total any-deer permits issued in 1978 was 12,750, compared to 11,300 in 1977.

Thirty-nine percent of hunting activity in the quota units occurred during the opening weekend when 62 percent of the harvest was taken. Twenty-six percent of total harvest was composed of does, ranging from 9-31 percent.

Statewide Archery Season

Archery permit sales were 34,368, an increase of 3.4 percent (Appendix D). Non-resident archers (1,171) decreased 10.4 percent -- permit fee increase caused the decline -- while resident archers (33,197) increased 4.0 percent. This increase was less than in most recent years.

Statewide hunter success was 8.1 percent, higher than any previous year. Increasing use of the compound bow may be causing increased archery success rates. Gladfelter (pers. comm. 1978) has found that the compound bow has significantly increased archer success in Iowa. Archers harvested 2,781 deer (Figure 4), an increase of 26.5 percent. Because archery hunting continues to supply much recreation with little drain on the resource, seasons similar to those of the recent past should continue.

Summary of Statewide Seasons

1. The 1978 firearms deer season was 9 days in length and included two weekends. Units 1,6,7,17,19,23 were bucks-only the entire season. Units 2,3,20,21,22 had one day of delayed either-sex hunting while Units 4 and 5 had 4 days delayed either-sex regulation. Units 8, 9,10,11,12,13,14,15,16,18 were managed under a quota system.
2. Harvest and hunting data were obtained from mandatory checking stations, biological stations and a post-season mail survey.
3. Total deer permit sales decreased 1.4 percent. Firearms sales decreased 1.0 percent and archery increased 3.4 percent.
4. 232,580 firearms hunters accumulated 1,044,284 trips.
5. Average number of trips per hunter was 4.5.
6. Statewide, 38 percent of season hunting occurred opening weekend; 88 percent of the hunters were in the field opening day.

Discussion (cont'd):

7. Total harvest increased 10.1 percent; the third largest harvest on record.
8. Female harvest decreased 7 percent from 1977, but was similar to the 1970-77 average.
9. 54 percent of the harvest occurred opening weekend; 22 percent occurred the second weekend.
10. Poor hunting conditions were responsible for the reduced harvest which occurred in 1978.
11. Bucks-only, delayed either-sex, and quotas successfully controlled harvest of females and should be retained as management tools.

Check Station Analysis

Age, sex and physical development data are collected annually to monitor any changes that might indicate overpopulation or overharvest. Check stations were operated the first two days of the firearms season in quota Units 8,10,12,13,14,15,16,18, the second Saturday in Units 2,3, 20,21,22 and the second weekend in Units 4 and 5, when either-sex hunting was in effect.

All successful hunters were required to submit their deer to check stations on the day killed. Biologists collected biological data at 19 of these check stations.

Techniques of aging deer and methods of collecting and recording data were reviewed with all check station personnel prior to the season. Deer were aged by eruption, replacement or wear of the mandibular teeth. Representative jaws of all age classes were provided for each check station. Length of hind foot and circumference of antler beam were measured with flexible steel tapes.

Biologists examined 3,690 deer, or 9 percent of the harvest (Table 16). All data were punched on computer cards and analyzed by use of the University of Missouri computer. Acknowledgment is made to Dr. Gary Krause, University of Missouri Agricultural Experiment Station Statistician, for data analysis, and also to Steve Sheriff, Wildlife Biometrician, Missouri Department of Conservation.

Sex and Age Ratios

The sex and age composition of the 1978 sample is presented in Table 17 and Appendix E. Fawns composed 29 percent of the statewide sample; yearlings 39 percent; and adults 32 percent.

Sex ratios showed males predominating in the yearling age group. This was especially true in quota units where sampling was done early in the

Discussion (cont'd):

season. Elsewhere, where sampling occurred following 7 days of bucks-only hunting, males composed a much lower proportion of the sample. Yearling males continue to be the most vulnerable segment of the population.

Adult females comprised 17 percent of the 1977 sample (Table 18). Adult females ranged from 6 to 14 percent in quota units and 22 to 26 percent in units having delayed either-sex regulations.

In addition to assessing age by the tooth wear-replacement technique, primary incisors of 1,493 deer aged at 2½ and older were collected for subsequent examination of cementum annuli. The technique of counting cementum annuli from sectioned incisors or molars has been reported as an alternate method of age determination in deer (Low and Cowan 1963, Gilbert 1966, Lockard 1972). The objective of the tooth collection was to compare results of tooth wear-replacement aging with those of a commercial laboratory using the cementum annuli.

Age determination at check stations followed normal procedures. Checkers were instructed to age deer first, and collect incisors from deer which were judged to be 2½ years and older. Fawns and yearlings can easily be aged by tooth replacement and it was not necessary to collect teeth from these age classes. Incisors were placed in envelopes, labeled and returned to the Columbia Research Center. The teeth were then soaked in water for 2 days, lightly scraped with a scalpel and brushed clean with a toothbrush. Cleaned teeth were inserted in numbered envelopes for individual identification.

Teeth collected in 1977 were mailed to Matson's Commercial Microtechnique, Milltown, Montana for slide preparation and cementum annuli age analysis. Results, however, were unsatisfactory since deer from southern regions tend to have "extra", non-annual cementum bands that complicate the analysis and add error.

The 1978 sample is to be analyzed at our own research facility in Columbia. Due to delays in obtaining equipment and difficulties in developing proper technique, results of the analysis are not yet available.

Physical Development

Fawn hind foot length and antler size of yearling bucks are used as indicators of range quality and condition. A decline in these physical parameters might indicate a food shortage due to overpopulations; however, Missouri's deer herd is still growing and overpopulation is not a problem. A decline in average size could also indicate a change in food quality.

Hind foot lengths of deer in the harvest sample are given in Table 19. Male foot lengths averaged more than female. The data again showed larger deer in northern units. Little difference occurred between

Discussion (cont'd):

yearling and adult foot lengths indicating that foot bones reach their maximum length before 1½ years of age. Foot lengths of fawns were similar to those from previous years.

Table 20 lists antler measurements for bucks in the 1978 harvest sample. Yearling males in the northern units had larger antlers, more points per antler and fewer spikes than deer from other units which again relates to food quality. Antler measurements varied little from previous data.

Special Deer Hunts

In 1966, special deer hunts were initiated on several Department areas. The objectives of these hunts were to: (1) maintain a sustained yield of deer, (2) maintain an acceptable level of hunter success, and (3) rebuild depleted herds in the interest of obtaining a more acceptable level of hunter success. After several years of experience it became apparent that these objectives were not being met on several of the areas. Consequently, in 1972, several hunts were either temporarily suspended or changed to create harvests more compatible with the deer resource base.

Hunts at Peck Ranch, Caney Mountain and Drury were established to hold harvests to a level equal with annual production and thus maintain relatively high deer populations. The hunts at Indian Trail, Deer Run and Mincy were designed to help build depleted populations. At Knob Noster State Park the objective was to reduce the deer herd.

Historic weapons hunts were held in October 1978 at Caney Mountain, Sam Baker State Park and Fort Leonard Wood. A December hunt was also held at Fort Leonard Wood. Modern firearms were allowed during a special 2-day hunt at Peck Ranch in November (coincided with the first 2 days of the statewide season). Archery hunts were held at Drury, Knob Noster State Park and Busch Area. Results of these and previous year's hunts are tabulated in Table 19.

Total harvest increased slightly, although success varied considerably among hunts. Weather was generally favorable and hunting conditions were good.

Winter browse surveys and summer spotlight counts have been conducted on most of the special hunt areas in recent years to add information on the status of deer populations. No browse utilization data were collected in 1977-78 because of time limitations of the project leaders.

The special hunt program continues to be very popular with hunter participants. Harvests are holding up well and are consistent with deer populations on the areas. Expansion of the program as potentials arise would be appropriate.

DEER MANAGEMENT UNITS
1978 Firearms Regulations



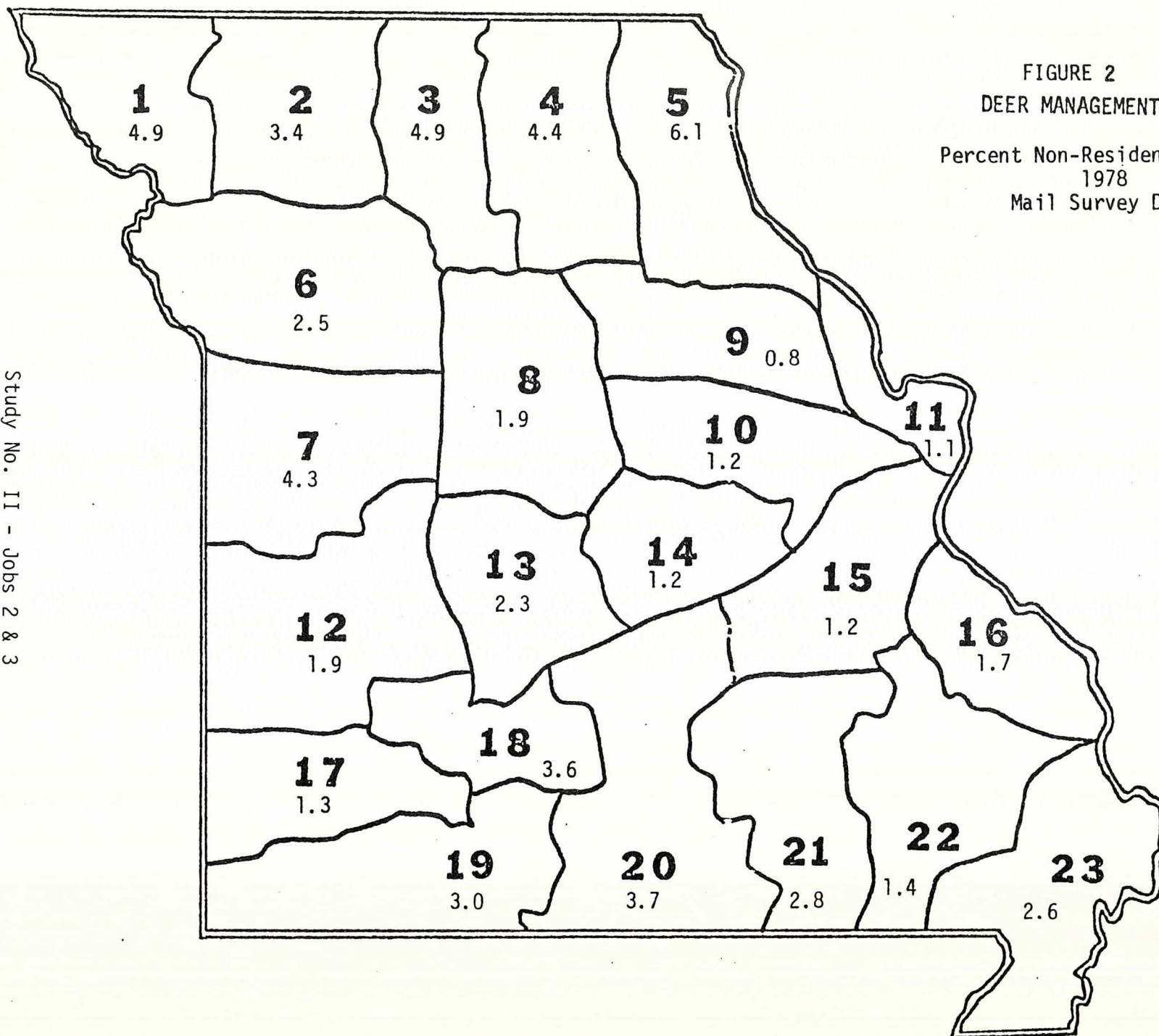


FIGURE 2
DEER MANAGEMENT UNITS

Percent Non-Resident Hunters
1978
Mail Survey Data

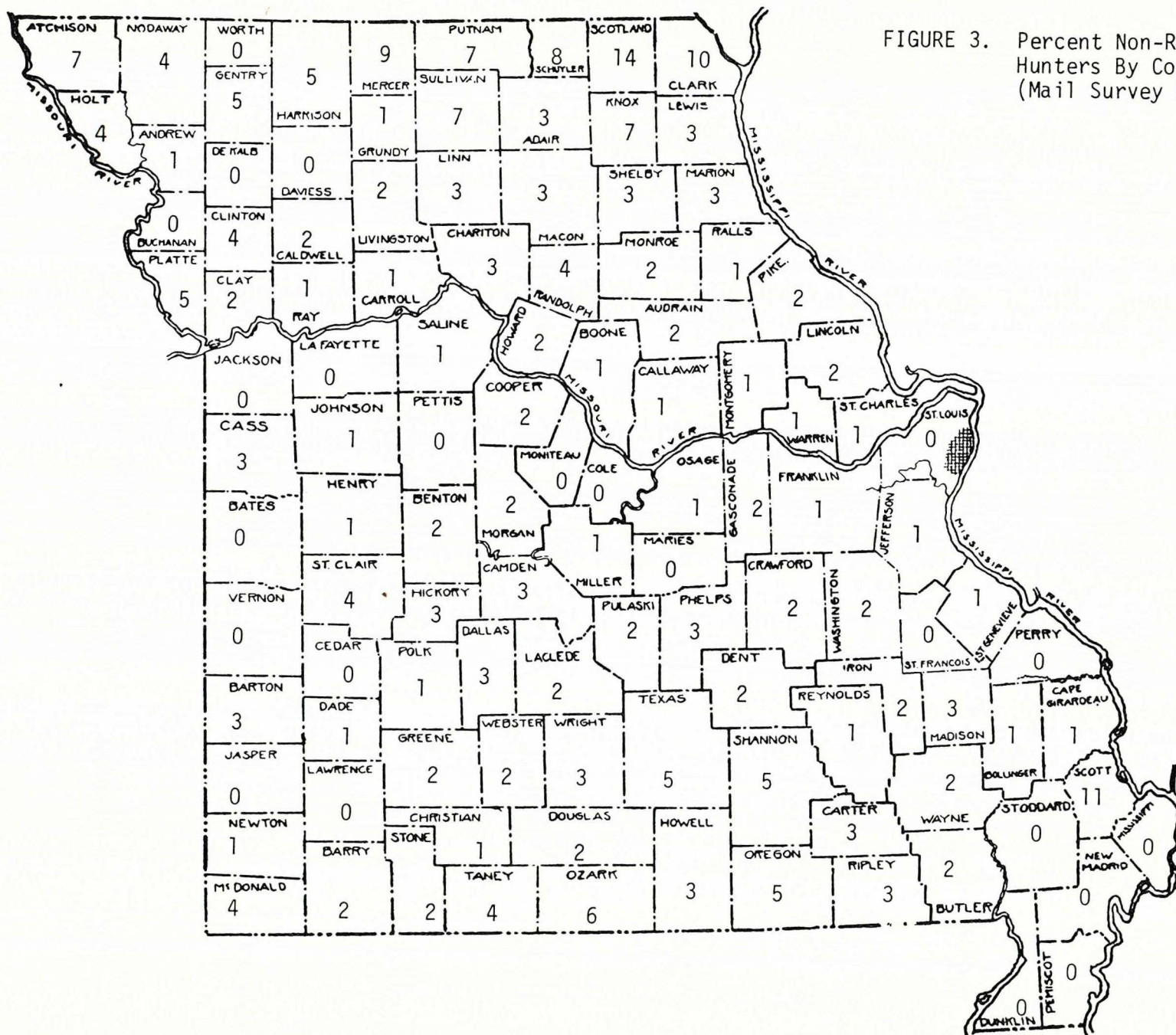


TABLE 1. Deer License Sales 1951-1978

Year	Resident Firearms	Non-Resident Firearms	Total Firearms	Resident Archery	Non-Resident Archery	Total Archery
1951	30,237			77		
1952	37,791			214		
1953	45,015			451		
1954	45,899			1,053		
1955	48,521			1,506		
1956	49,108			2,075		
1957	49,021	786	49,942	2,563	157	2,720
1958	58,147	1,245	59,392	3,475	195	3,670
1959	66,613	1,669	68,282	4,221	274	4,495
1960	83,899	2,032	85,931	4,152	316	4,468
1961	88,099	2,247	90,346	4,850	340	5,190
1962	100,093	2,692	102,785	5,746	299	6,045
1963	102,631	2,851	105,482	6,974	350	7,324
1964	118,651	3,758	122,409	9,184	350	9,534
1965	106,538	3,041	109,579	10,381	375	10,756
1966	126,255	4,387	130,642	11,489	389	11,878
1967	145,363	4,742	150,105	13,121	440	13,561
1968	153,775	5,487	159,262	14,924	586	15,510
1969	139,702	4,734	144,436	14,202	507	14,709
1970	158,590	5,484	164,074	16,478	472	16,950
1971	165,967	6,332	172,299	18,513	604	19,117
1972	172,293	7,415	186,708	20,841	652	21,493
1973	201,087	9,683	210,770	24,508	746	25,254
1974	202,970	10,221	213,191	27,015	856	27,871
1975	221,481	12,990	234,471	28,948	1,026	29,974
1976	217,875	14,890	232,715	30,098	1,183	31,281
1977	233,888	16,304	250,192	31,932	1,307	33,239
1978	240,149	6,654	246,803	33,197	1,171	34,368

TABLE 2. Average Number of Days Afield Per Hunter
1970-1978

Class Of Hunter	1978	1977	1976	1975	1974	1973	1972	1971	1970
Successful	3.0	3.3	3.2	2.0	3.2	3.5	3.8	2.1	2.2
Unsuccessful	4.8	4.8	4.9	4.6	4.8	4.6	4.6	4.1	4.1
Total Hunters	4.5	4.5	4.6	3.9	4.6	4.5	4.5	3.7	3.8

TABLE 3. Percentage of Hunting Activity (Trips) By Day of Season, 1978

Management Unit	NOVEMBER									Avg. No. Days Hunted	Hunter Days In Sample
	18	19	20	21	22	23	24	25	26		
1	19.0	16.4	9.5	7.7	7.3	8.2	8.8	12.2	11.0	4.1	548
2	21.3	17.6	7.8	6.0	5.1	7.8	8.7	15.1	10.4	3.8	895
3	22.0	18.6	7.1	6.2	5.7	7.3	7.8	16.0	9.4	3.7	1,045
4	19.6	16.7	7.7	6.3	6.6	9.2	9.8	13.7	10.3	3.8	1,645
5	18.5	16.0	8.1	6.7	6.6	9.6	11.1	13.6	9.9	4.1	1,811
6	20.1	17.8	9.0	6.0	6.2	6.9	9.2	14.4	10.4	3.8	681
7	22.0	17.9	6.5	4.9	6.8	8.0	9.1	13.3	11.4	3.3	263
8	20.1	17.6	9.1	7.1	6.5	7.4	8.1	13.0	11.2	3.9	1,725
9	22.0	19.0	7.6	5.4	4.6	7.2	9.1	14.1	11.1	3.4	569
10	21.4	19.1	7.3	6.3	6.0	7.7	8.4	13.0	10.7	4.0	2,998
11	20.5	17.6	7.6	5.6	6.1	7.1	8.3	15.1	12.2	3.7	410
12	22.2	18.5	8.7	6.0	6.2	6.6	8.2	13.0	10.7	3.0	1,521
13	21.6	18.9	8.6	6.4	6.0	6.6	7.8	13.0	11.1	3.7	2,597
14	21.0	18.8	7.5	6.0	5.3	7.3	8.6	13.8	11.7	3.8	1,981
15	19.9	18.1	7.9	6.3	6.9	7.2	9.2	13.4	11.0	4.0	2,167
16	19.8	17.5	8.0	6.2	5.5	8.5	8.9	13.8	11.8	4.4	1,392
17	23.1	19.6	6.9	6.2	6.9	7.3	7.7	11.9	10.4	3.5	260
18	19.7	18.3	10.2	7.6	6.4	5.9	8.1	12.8	11.0	3.5	529
19	20.0	17.1	8.9	7.6	6.4	8.0	8.9	12.9	10.1	4.1	1,600
20	19.0	17.1	9.0	7.5	6.6	7.7	9.7	13.9	9.6	4.0	3,081
21	18.2	16.4	10.1	8.2	7.2	7.8	9.2	13.4	9.4	4.1	2,516
22	18.3	16.1	9.4	7.2	6.8	8.2	10.0	14.7	9.4	4.2	2,393
23	18.4	16.2	10.3	9.6	7.3	7.4	10.3	11.8	8.8	3.4	136
Quota Units	20.9	18.4	8.1	6.4	6.1	7.2	8.5	13.3	11.1	4.2	15,889
Four-Day Any-Deer Units	19.0	16.3	7.9	6.5	6.6	9.4	10.5	13.7	10.1	4.1	3,456
One-Day Any-Deer Units	19.2	16.9	9.0	7.3	6.6	7.8	9.3	14.3	9.6	4.3	9,930
Bucks-Only Units	20.2	17.4	8.7	7.0	6.7	7.7	8.9	13.0	10.4	4.0	3,488
STATEWIDE	20.1	17.6	8.5	6.7	6.3	7.7	9.0	13.6	10.5	4.5	32,763

TABLE 4. Percentage of Hunting Activity (Trips) By Day of Season, 1970-78

Day Of Season	1978	1977	1976	1975	1974	1973	1972	1971	1970
1st	20.1	20.3	20.0	24.5	19.3	19.1	19.2	25.2	23.4
2nd	17.6	18.0	17.7	19.9	17.6	17.1	16.9	21.9	21.2
3rd	8.5	8.5	8.8	9.0	8.9	7.9	7.8	11.1	11.8
4th	6.7	6.7	7.1	6.6	7.0	6.2	6.2	7.8	7.8
5th	6.3	6.2	6.5	5.8	6.4	6.0	5.8	5.5	5.3
6th	7.7*	7.4*	6.2	5.1	6.1	7.8*	7.9*	4.6	4.4
7th	9.0	8.9	7.3	6.2	7.6	9.1	8.8	5.0	4.6
8th	13.6	13.7	14.2	12.2	14.7	14.5	15.1	10.3	8.3
9th	10.5	10.4	12.2	10.7	12.6	12.4	12.4	8.5	8.6
10th	--	--	--	--	--	--	--	--	4.6
OPENING DAY OF WEEK	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.

*Thanksgiving

TABLE 5. Summary, Hunting Activity By Portion of Season, 1978

Area	Year	PERCENT OF HUNTING ACTIVITY			
		First 2 Days	First 7 Days	Last 4 Days	Last 2 Days
One-Day Any-Deer Units	1978	36.1	76.1	41.0	23.9
Four-Day Any-Deer Units	1978	35.3	76.2	43.7	23.8
Bucks-Only Units	1978	37.6	76.6	40.0	23.4
Quota Units	1978	39.3	75.6	40.1	24.4
STATEWIDE	1978	37.8	75.9	40.8	24.1
STATEWIDE	1977	38.3	76.0	40.4	24.1
STATEWIDE	1976	37.7	73.6	39.9	26.4
STATEWIDE	1975	44.4	77.1	34.2	22.9
STATEWIDE	1974	36.9	72.8	40.9	27.2

TABLE 6. Percentage of Hunters in Field By Day of Season, 1978

Management Unit	NOVEMBER									Total Hunters In Sample
	18	19	20	21	22	23	24	25	26	
1	84.6	73.2	42.3	34.2	32.5	36.6	39.0	54.5	48.8	123
2	88.8	73.5	32.6	25.1	21.4	32.6	36.3	62.8	43.3	215
3	88.5	74.6	28.5	25.0	23.1	29.2	31.2	64.2	37.7	260
4	82.2	70.0	32.3	26.2	27.5	38.7	41.0	57.5	43.3	393
5	84.6	73.0	36.9	30.6	30.3	43.7	50.8	62.1	45.4	396
6	82.0	72.5	36.5	24.5	25.2	28.1	37.7	58.7	42.5	167
7	84.1	68.1	24.6	18.8	26.1	30.4	34.8	50.7	43.5	69
8	87.6	76.7	39.8	30.9	28.4	32.2	35.4	57.0	48.9	395
9	82.8	71.5	28.5	20.5	17.2	27.2	34.4	53.0	41.7	151
10	91.3	81.2	31.2	26.7	25.4	33.0	36.0	55.5	45.4	704
11	86.6	74.2	32.0	23.7	25.8	29.9	35.0	63.9	51.6	97
12	90.1	75.1	35.3	24.6	25.1	27.0	33.2	52.7	43.6	374
13	89.2	77.8	35.4	26.5	24.8	27.0	32.2	53.5	45.9	630
14	87.9	79.0	31.6	25.2	22.2	30.5	36.2	58.0	48.9	472
15	89.1	81.0	35.5	28.2	30.9	32.0	41.2	59.8	49.1	485
16	93.6	82.4	38.0	29.5	25.8	40.0	42.0	65.1	55.6	295
17	88.2	75.0	26.5	23.5	26.5	27.9	29.4	45.6	39.7	68
18	85.2	79.5	44.3	32.8	27.9	25.4	35.2	55.7	47.5	122
19	88.6	75.9	39.6	33.5	28.5	35.5	39.3	57.3	44.9	361
20	86.5	78.1	41.0	34.2	29.9	34.9	44.1	63.2	43.9	676
21	89.3	80.4	49.2	40.3	35.4	38.1	45.0	65.8	46.1	514
22	85.5	75.3	44.2	33.7	31.9	38.4	46.8	68.7	43.8	511
23	83.3	73.3	46.7	43.3	33.3	33.3	46.7	53.3	40.0	30
Quota Units	89.2	78.7	34.7	27.0	25.7	30.8	36.1	56.8	47.5	3,725
Four-Day Any-Deer Units	83.4	71.5	34.6	28.4	28.9	41.2	45.9	59.8	44.4	789
One-Day Any-Deer Units	87.4	77.1	41.4	33.5	30.0	35.6	42.6	65.2	43.6	2,176
Bucks-Only Units	86.1	74.0	37.3	30.1	28.2	33.0	38.0	55.5	44.2	818
STATEWIDE	87.8	77.0	36.9	29.4	27.6	33.5	39.2	59.4	45.7	7,508
Statewide Number Hunters	204,205	179,087	85,822	68,378	64,192	77,914	91,171	138,152	106,289	232,580

TABLE 7. Hunting Trips By Firearms Deer Hunters, 1970-78

Year	Trips
1970	595,696
1971	626,048
1972	795,710
1973	881,934
1974	928,398
1975	873,038
1976	998,660
1977	1,091,698
1978	1,044,284

TABLE 8. Percent of Hunters Wearing An Outer Garment of Hunter Orange During 1978 Firearms Season

	All Hunters	Successful Hunters	Unsuccessful Hunters
Wore Orange	94	93	95
No Orange	6	7	5

TABLE 9. Comparison of Hunters Seen By Hunters Versus Hunter Density
1978 Firearms Season

Management Unit	Average Number Hunters Seen	Hunters Per Sq. Mi. Forest	Number Hunters
1	7.0	11.9	3,759
2	7.7	10.8	6,398
3	7.3	15.5	7,838
4	8.8	18.0	12,721
5	7.6	9.9	11,842
6	4.6	9.3	5,712
7	5.1	4.3	2,667
8	5.7	10.7	12,724
9	5.4	9.4	6,036
10	4.9	15.4	22,220
11	4.7	13.6	3,416
12	7.7	8.3	11,697
13	6.9	10.8	20,292
14	5.8	13.0	16,062
15	7.1	8.4	16,787
16	4.6	11.0	9,334
17	6.7	8.2	2,663
18	7.1	6.7	4,808
19	7.9	5.8	10,756
20	8.6	7.5	22,858
21	10.1	7.0	18,662
22	8.2	7.3	17,450
23	11.6	4.6	1,318
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STATEWIDE	7.2	8.7	232,580
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All Successful	5.9		
All Unsuccessful	7.5		

TABLE 10. Deer Harvest By Management Unit, 1978
(Check Station Data)

Management Unit	Number Of Does	Percent Does	Number Of Bucks	Percent Bucks	Antlered Males*	Percent Antlered Males	Total Number Of Deer
1	5	1	478	99	478	100	483
2	289	22	1026	78	789	60	1315
3	428	25	1263	75	1116	66	1691
4	1523	37	2619	63	1822	44	4142
5	1789	37	3015	63	2306	48	4804
6	1	0	713	100	714	100	714
7	2	1	328	99	330	100	330
8	211	19	896	81	841	76	1107
9	85	12	643	88	524	72	728
10	1821	31	4051	69	3230	55	5872
11	33	9	353	91	216	56	386
12	613	29	1535	71	1482	69	2148
13	391	22	1407	78	1456	81	1798
14	503	28	1291	72	1256	70	1794
15	142	14	877	86	713	70	1019
16	387	27	1056	73	1053	73	1443
17	1	0	199	100	200	100	200
18	74	25	224	75	259	87	298
19	8	0	1871	100	1879	100	1879
20	935	20	3851	80	3590	75	4786
21	254	17	1245	83	1229	82	1499
22	420	23	1391	77	1322	73	1811
23	0	0	14	100	14	100	14
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Quota Units	4260	26	12,333	74	12,113	73	16,593
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Four-Day Any-Deer Units	3312	37	5634	63	4115	46	8946
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One-Day Any-Deer Units	2326	21	8776	79	7993	72	11,102
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Bucks-Only Units	17	0	3603	100	3620	100	3620
<hr/>							
STATEWIDE	9915	25	30,346	75	26,975	67	40,261

*Estimated number and percentage based on Mail Survey Data. At least one antler more than three inches.

TABLE 11. Percentage of Harvest By Day of Season, 1978

Management Unit	NOVEMBER									Sample Size	Total Harvest*
	18	19	20	21	22	23	24	25	26		
1	44.4	14.8	11.1	3.7	3.7	7.4	3.7	3.7	7.4	27	483
2	26.9	15.4	3.8	3.8	1.9	0.0	1.9	44.2	0.0	52	1,315
3	35.9	13.0	0.0	1.1	2.2	4.4	3.3	35.9	2.2	92	1,691
4	20.6	7.8	2.2	1.7	1.7	13.9	12.8	26.7	11.7	180	4,142
5	17.8	19.8	1.9	0.6	0.6	10.2	10.8	23.6	14.0	157	4,804
6	42.9	33.3	9.5	0.0	0.0	9.5	4.8	0.0	0.0	21	714
7	46.2	23.1	7.7	0.0	0.0	15.4	0.0	7.7	0.0	13	330
8	37.5	16.2	8.8	5.0	5.0	10.0	3.8	2.5	5.0	80	1,107
9	39.1	28.3	4.4	2.2	2.2	2.2	8.7	10.9	2.2	46	728
10	37.3	24.4	3.5	3.5	6.0	7.0	6.0	5.5	6.5	201	5,872
11	62.5	18.8	6.2	0.0	6.2	0.0	0.0	0.0	6.2	16	386
12	51.3	16.7	7.7	6.4	5.1	1.3	3.8	2.6	5.1	78	2,148
13	46.5	14.0	8.8	3.5	4.4	1.8	2.6	13.2	5.3	114	1,798
14	40.9	20.4	4.6	4.6	4.6	5.7	3.4	8.0	8.0	88	1,794
15	29.7	28.4	6.8	2.7	6.8	8.1	1.4	13.5	2.7	74	1,019
16	46.9	20.4	6.1	4.1	2.0	8.2	6.1	6.1	0.0	49	1,443
17	29.4	41.2	5.9	5.9	11.8	5.9	0.0	0.0	0.0	17	200
18	40.0	33.3	0.0	0.0	6.7	13.3	6.7	0.0	0.0	15	298
19	50.0	18.3	6.7	8.3	3.3	3.3	1.7	6.7	1.7	60	1,879
20	28.8	22.0	3.8	3.0	0.8	4.6	4.6	29.6	2.3	132	4,786
21	26.9	20.5	6.4	5.1	2.6	3.8	6.4	26.9	1.3	78	1,499
22	29.7	16.2	6.8	4.0	1.4	2.7	4.0	31.1	4.0	74	1,811
23	0.0	0.0	0.0	40.0	0.0	0.0	0.0	60.0	0.0	5	14
Quota Units	40.1	21.8	6.2	4.1	5.6	5.0	4.3	8.0	4.7	761	16,593
Four-Day Any-Deer Units	21.1	13.0	2.4	1.2	1.6	11.4	14.6	23.6	10.6	337	8,946
One-Day Any-Deer Units	28.9	19.7	4.3	3.3	1.6	3.0	4.6	32.1	1.6	428	11,102
Bucks-Only Units	41.8	24.2	7.7	6.6	5.5	4.4	3.3	4.4	2.2	143	3,620
STATEWIDE	33.7	19.8	4.8	3.4	3.6	5.5	6.6	16.8	4.7	1,669	
Statewide Daily Harvest	13,568	7972	1933	1369	1449	2214	2657	6764	1892		40,261

*Check Station Data

TABLE 12. Percent of Harvest By Day of Season, 1970-78

Day Of Season	1978	1977	1976	1975	1974	1973	1972	1971	1970
1st	33.7	30.8	28.6	55.0	30.5	28.3	20.9	47.5	39.6
2nd	19.8	13.5	16.0	26.7	15.3	12.0	11.1	27.8	30.2
3rd	4.8	5.2	16.6	3.4	4.7	2.8	4.1	6.8	10.6
4th	3.4	3.6	3.9	1.7	3.3	2.1	3.8	5.7	8.5
5th	3.6	3.7	3.5	2.5	3.7	3.5	2.8	1.8	1.8
6th	5.5	5.0	3.4	1.2	2.7	5.5	4.5	1.6	0.9
7th	6.6	3.0	2.5	1.2	2.0	3.6	4.0	1.2	0.6
8th	16.8	22.0	20.9	3.1	21.3	19.3	26.5	3.7	2.2
9th	4.7	11.8	12.6	4.1	15.6	22.4	22.3	1.9	1.6
10th	--	--	--	--	--	--	--	--	0.7
OPENING DAY OF WEEK	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.	Sat.

TABLE 13. Summary, Harvest By Portion of Season, 1978

Management Unit	PERCENT OF HARVEST			
	First 2 Days	First 7 Days	Last 4 Days	Last 2 Days
1	59.2	88.8	22.2	11.1
2	42.3	53.7	46.1	44.2
3	48.9	59.9	45.8	38.1
4	28.4	60.7	65.1	38.4
5	37.6	61.7	58.6	37.6
6	76.2	100.0	14.3	0.0
7	69.3	92.4	23.1	7.0
8	53.7	86.3	26.3	12.5
9	67.4	87.1	24.0	13.1
10	61.7	87.7	25.0	12.0
11	81.3	93.7	6.2	6.2
12	68.0	92.3	12.8	7.7
13	60.5	81.6	22.9	18.5
14	61.3	84.2	25.1	16.0
15	58.1	83.9	25.7	16.2
16	67.3	93.8	20.4	6.1
17	70.6	100.0	5.9	0.0
18	73.3	100.0	20.0	0.0
19	68.3	91.6	13.4	8.4
20	50.8	67.6	41.1	31.9
21	47.4	71.7	38.4	28.2
22	45.9	64.8	41.8	35.1
23	0.0	40.0	60.0	60.0
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Quota Units	61.9	87.1	22.0	12.7
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Four Day Any-Deer Units	34.1	65.3	60.2	34.2
<hr/>				
One-Day Any-Deer Units	48.6	65.4	41.3	33.7
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Bucks-Only Units	66.0	93.5	14.3	6.6
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STATEWIDE 1978	53.5	77.4	33.6	21.5
1977	44.3	64.9	41.7	33.7
1976	44.6	64.5	39.4	33.5
1975	81.7	91.7	9.6	7.2
1974	45.8	62.2	41.7	36.9

TABLE 14. Percent Success By Day of Season By Firearms Hunters, 1978*

Day Of Season	QUOTA UNITS			FOUR-DAY ANY-DEER UNITS			ONE-DAY ANY-DEER UNITS			BUCKS-ONLY UNITS			STATEWIDE		
	Hunters	Harvest	% Success	Hunters	Harvest	% Success	Hunters	Harvest	% Success	Hunters	Harvest	% Success	Hunters	Harvest	% Success
1-Sat.	101,411	5,417	5.3	19,516	1,706	8.7	59,670	2,905	4.9	22,354	1,385	6.2	204,204	11,782	5.8
2-Sun.	89,473	2,945	3.3	16,732	1,051	6.3	52,638	1,980	3.8	19,213	802	4.2	179,086	6,922	3.9
3-Mon.	39,450	837	2.1	8,097	194	2.4	28,265	432	1.5	9,684	255	2.6	85,822	1,678	2.0
4-Tue.	30,696	554	1.8	6,646	97	1.5	22,871	332	1.4	7,815	219	2.8	68,378	1,189	1.7
5-Wed.	29,218	756	2.6	6,763	129	1.9	20,482	161	0.8	7,322	182	2.5	64,192	1,259	2.0
6-Thu.	35,016	675	1.9	9,641	922	9.6	24,305	302	1.2	8,569	146	1.7	77,914	1,923	2.5
7-Fri.	41,042	581	1.4	10,741	1,180	11.0	29,084	462	1.6	9,866	109	1.1	91,171	2,307	2.5
8-Sat.	64,575	1,080	1.7	13,994	1,908	13.6	44,513	3,227	7.2	14,409	146	1.0	138,152	5,873	4.2
9-Sun.	54,002	635	1.2	10,390	857	8.2	29,767	161	0.5	11,476	73	0.6	106,289	1,643	1.5
TOTAL	113,639	13,508	11.9	23,401	8,086	34.5	68,272	10,053	14.7	25,963	3,314	12.8	232,579	34,961	15.0

*Does not include farmer-kills.

TABLE 15. Harvest By Either-Sex Permit Holders, 1978

Mgmt. Unit	Quota		EITHER-SEX PERMITTEE HARVEST		TOTAL UNIT HARVEST		
			Female*		Male	Female	Total
8	550	No. Harvested % Success	108 19.6		896 6.8	211 1.6	1,107 8.5
9	0	No. Harvested % Success	20 --		643 11.0	85 1.4	728 12.4
10	5,750	No. Harvested % Success	1319 22.9		4051 17.2	1821 7.8	5872 25.0
11	0	No. Harvested % Success	5 --		353 12.6	33 1.2	386 13.8
12	1,975	No. Harvested % Success	376 19.0		1535 13.8	613 5.5	2,148 19.4
13	1,100	No. Harvested % Success	217 19.7		1479 7.1	319 1.5	1,798 8.6
14	750	No. Harvested % Success	263 35.1		1291 7.9	503 3.1	1,794 11.0
15	1,200	No. Harvested % Success	104 8.7		877 5.4	142 0.8	1,019 6.2
16	1,100	No. Harvested % Success	232 21.1		1056 10.7	387 3.9	1,443 14.6
18	325	No. Harvested % Success	35 10.8		224 4.6	74 1.5	298 6.1

*Includes Landowner Any-Deer Permits.

TABLE 16. Distribution of Biologist Check Station Sample,
1978 Deer Season

Management Unit	Counties Sampled*	Number Of Deer
2	Harrison	120
3	Linn	133
4	Adair, Macon	727
5	Clark, Lewis	420
8	Cooper	112
10	Gasconade, Warren	544
12	St. Clair	227
13	Camden	251
14	Maries	214
15	Washington	142
16	Ste. Genevieve	340
18	Webster	83
20	Ozark, Texas	263
21	Shannon	49
22	Wayne	65
TOTAL		3,690

TABLE 17. Sex and Age Composition of 1978 Deer Harvest Sample

Mgmt. Unit	FAWNS					YEARLINGS					ADULTS				
	Male	Female	Total No.	%	Sex Ratio % Males	Male	Female	Total No.	%	Sex Ratio % Males	Male	Female	Total No.	%	Sex Ratio % Males
2	43	26	69	57.5	62.3	2	17	19	15.8	10.5	5	27	32	26.7	15.6
3	39	32	71	58.2	54.9	4	9	13	10.7	30.8	6	32	38	31.1	15.8
4	195	144	339	45.9	57.5	69	110	179	24.3	38.5	33	187	220	29.8	15.0
5	127	87	214	51.0	59.3	36	53	89	21.2	40.4	11	106	117	27.9	9.4
8	14	5	19	17.0	73.7	53	3	56	50.0	94.6	25	12	37	33.0	67.6
9	1	2	3	20.0	33.3	9	0	9	60.0	100.0	3	0	3	20.0	100.0
10	38	43	81	15.3	46.9	226	34	260	49.2	86.9	111	76	187	35.4	59.4
12	15	14	29	12.8	51.7	120	15	135	59.5	88.9	45	18	63	27.8	71.4
13	20	10	30	11.7	66.7	130	10	140	54.5	92.9	69	18	87	33.9	79.3
14	12	12	24	11.2	50.0	92	9	101	47.2	91.1	64	25	89	41.6	71.9
15	3	6	9	6.3	33.3	72	1	73	51.4	98.6	49	11	60	42.3	81.7
16	20	14	34	10.0	58.8	195	17	212	62.4	92.0	63	31	94	27.6	67.0
18	3	6	9	10.7	33.3	44	5	49	58.3	89.8	21	5	26	31.0	80.8
20	43	56	99	38.5	43.4	49	35	84	32.7	58.3	17	57	74	28.8	23.0
21	11	14	25	45.5	44.0	5	6	11	20.0	45.5	7	12	19	34.5	36.8
22	17	12	29	44.6	58.6	10	8	18	27.7	55.6	1	17	18	27.7	5.6
TOTAL	601	483	1084	29.3	55.4	1116	332	1448	39.2	77.1	531	634	1164	31.5	45.6

Study No. II - Jobs 2 & 3

TABLE 18. Percent Adult Females in 1978 Harvest Sample

Mgmt. Unit	No. Of Adult Females	Sample Size	% Of Adult Females In Sample
2	27	120	22.5
3	32	122	26.2
4	187	738	25.3
5	106	420	25.2
8	12	112	10.7
9	0	15	0.0
10	76	528	14.4
12	18	227	7.9
13	18	257	7.0
14	25	214	11.7
15	11	142	7.7
16	31	340	9.1
18	5	84	6.0
20	57	257	22.2
21	12	55	21.8
22	17	65	26.2
TOTAL	634	3697	17.1

TABLE 19. Hind Foot Length of Deer in the 1978 Harvest Sample

Mgmt. Unit	FAWNS				YEARLINGS				ADULTS			
	Male	Female	Average	C.I.	Male	Female	Average	C.I.	Male	Female	Average	C.I.
2	44.5	42.6	43.8	0.24	49.0	47.3	47.5	0.35	50.2	46.3	46.9	0.43
3	43.6	41.8	42.8	0.23	47.3	46.8	46.9	0.43	49.3	47.0	47.4	0.31
4	42.7	41.4	42.1	0.13	48.1	45.1	46.2	0.18	49.1	46.1	46.5	0.14
5	32.8	27.4	30.6	0.90	34.8	38.7	37.1	1.43	27.3	32.8	32.3	1.32
8	44.2	43.8	44.1	0.30	48.8	45.0	48.6	0.22	49.4	45.7	48.2	0.45
9	51.0	42.5	45.3	3.49	49.4	0.0	49.4	0.69	48.0	0.0	48.0	0.00
10	43.2	40.2	41.6	0.34	47.4	45.4	47.2	0.15	49.3	45.7	47.8	0.21
12	42.0	40.8	41.4	0.50	46.1	44.1	45.9	0.16	47.0	44.7	46.3	0.25
13	39.6	38.7	39.3	1.39	45.6	44.3	45.5	0.12	46.8	44.4	46.3	0.20
14	41.3	38.8	40.1	0.44	45.4	42.6	45.2	0.20	46.6	43.9	45.8	0.25
15	39.7	34.0	35.9	4.34	47.0	49.0	47.0	0.24	48.8	46.5	48.4	0.25
16	40.7	38.8	40.0	0.46	44.4	42.5	44.2	0.12	45.8	42.7	44.8	0.23
18	41.0	40.2	40.4	0.40	46.6	44.4	46.4	0.27	47.2	45.4	46.9	0.41
20	39.3	38.1	38.6	0.27	43.4	41.5	42.6	0.26	45.1	42.9	43.4	0.23
21	40.3	39.4	39.8	0.45	45.5	44.2	44.7	0.55	46.0	44.2	44.8	0.40
22	41.6	41.1	41.4	0.55	46.3	44.1	45.3	0.46	44.0	43.3	43.3	0.82
TOTAL	40.2	38.0	39.2	0.25	45.8	43.5	45.3	1.23	47.3	43.0	45.0	1.71

TABLE 20. Antler Measurements of Bucks in the 1978 Harvest Sample

Mgmt. Unit	YEARLINGS					ADULTS				
	Number	Average Circum.	Number	Average Points Per Antler	% Spike Bucks	Number	Average Circum.	Number	Average Points Per Antler	% Spike Bucks
2	3	71.0	3	2.0	33.3	5	75.4	5	3.2	0.0
3	3	78.3	3	3.0	0.0	6	68.8	6	4.0	0.0
4	66	68.3	70	2.8	5.7	31	98.0	31	4.3	0.0
5	34	40.4	34	2.9	0.0	11	27.7	11	4.2	0.0
8	52	71.3	52	2.9	5.8	25	96.7	25	4.2	0.0
9	9	63.9	9	2.3	22.2	3	83.3	3	3.3	0.0
10	221	60.9	222	2.2	17.6	109	89.1	109	3.9	0.0
12	120	57.3	120	1.9	21.7	45	92.8	45	3.9	0.0
13	129	54.8	128	1.7	29.7	68	82.4	68	3.6	1.5
14	91	59.1	87	2.1	21.8	62	86.7	63	3.9	0.0
15	72	52.5	72	1.6	31.9	48	87.8	49	3.7	2.0
16	29	71.1	189	1.8	28.0	21	95.3	63	3.7	0.0
18	44	61.9	44	2.1	20.5	21	88.4	21	3.5	0.0
20	43	55.1	48	1.7	37.5	17	87.2	17	3.5	0.0
21	4	57.0	5	2.2	20.0	7	94.3	7	4.1	0.0
22	10	58.6	10	2.2	30.0	1	99.0	1	5.0	0.0
TOTAL	930	59.3	1096	2.1	21.8	481	87.4	525	3.8	0.4

TABLE 21. Statistics of Managed Deer Hunts in Missouri

FIREARMS							
Area	Year	Quota Of Hunters	Actual Hunters	Hunters Per Sq. Mi.	No. Of Deer Harvested	% Hunter Success	Harvest Per Sq. Mi.
Peck Ranch (10,841 acres)	1966	300	276	16.9	107	38.8	6.3
	1967	300	261	15.4	86	33.0	5.1
	1968	300	236	13.9	59	25.0	3.5
	1969	350	267	15.8	72	27.0	4.3
	1970	350	300	17.7	70	23.3	4.1
	1971	350	332	19.6	69	20.8	4.1
	1972*	400	332	19.6	13	3.9	0.8
	1973*	400	353	20.9	27	7.6	1.6
	1974*	400	318	20.8	23	7.2	1.4
	1975*	400	70	4.1	8	11.4	0.5
	1976*	400	264	15.6	22	8.3	1.3
	1977*	400	318	18.8	40	12.6	2.4
	1978*	400	310	18.7	34	11.0	2.0
Indian Trail (13,255 acres)	1966	150	66	3.2	15	22.7	0.7
	1967	150	113	5.5	18	15.9	0.9
	1968	150	107	5.2	19	17.8	0.9
	1969	150	98	4.7	19	19.4	0.9
	1970	150	122	5.9	8	6.6	0.4
	1971	150	125	6.0	11	8.8	0.5
Deer Run (6,675 acres)	1966	150	63	6.0	9	14.3	0.9
	1967	150	95	9.1	11	11.6	1.1
	1968	150	114	10.9	12	10.5	1.2
	1969	150	124	11.9	20	16.1	1.9
	1970	150	105	10.1	13	12.4	1.2
	1971	150	120	11.5	13	10.8	1.2
Mincy (3,580 acres)	1967	100	63	11.3	4	6.3	0.7
	1969	100	83	14.8	16	19.3	2.9
	1970	100	72	12.9	8	11.1	1.4
HISTORIC WEAPONS							
Caney Mtn. (5,489 acres)	1967	None	443	51.7	38	8.6	4.4
	1968	None	680	79.3	92	13.5	10.7
	1969	None	895	104.4	114	12.7	13.3
	1970	700	568	66.3	61	10.7	7.1

(continued)

TABLE 21 (continued)

HISTORIC WEAPONS (cont'd)							
Area	Year	Quota Of Hunters	Actual Hunters	Hunters Per Sq. Mi.	No. Of Deer Harvested	% Hunter Success	Harvest Per Sq. Mi.
Caney Mtn.	1971	700	587	68.4	73	12.4	8.5
	1972	700	610	71.1	51	8.4	5.9
	1973	500	380	44.3	43	11.3	5.0
	1974	500	442	51.5	50	11.3	5.8
	1975	500	457	53.3	115	25.2	13.4
	1976	500	430	50.2	47	10.9	5.5
	1977	500	477	55.7	48	10.1	5.6
	1978	500	434	50.6	52	12.0	6.1
Fort Leonard Wood (Various Portions)							
(8,144 acres)	Oct.-1974	500	351	37.6	27	7.7	2.1
(9,572 acres)	Dec.-1974	500	330	22.1	10	3.0	0.7
(9,572 acres)	Oct.-1975	500	441	29.5	57	12.9	3.8
(8,144 acres)	Dec.-1975	550	445	35.0	30	6.7	2.4
(9,572 acres)	Oct.-1976	500	433	29.0	47	10.9	3.1
(8,144 acres)	Dec.-1976	1000	655	51.5	42	6.4	3.3
(16,500 acres)	Oct.-1977	750	708	27.5	54	7.6	2.1
(26,100 acres)	Dec.-1977	1000	600	14.9	76	12.7	1.9
(16,500 acres)	Oct.-1978	750	617	23.9	80	13.0	3.1
(26,100 acres)	Dec.-1978	1000	675	16.5	61	9.0	1.5
Sam Baker (2,626 acres)							
	1974	150	139	33.9	19	13.7	4.6
	1975	150	140	34.1	45	32.1	11.0
	1976	150	145	35.4	13	9.0	3.2
	1977	150	142	34.6	17	12.0	4.1
	1978	150	135	32.9	32	23.7	7.8
Deer Ridge (4,259 acres)							
	1971	350	239	35.9	12	5.0	1.8

ARCHERY

Drury (1,877 acres)	1972	100	84	28.7	5	6.0	1.7
	1973	200	136	46.4	8	5.9	2.7
	1974	300	267	91.1	21	7.9	7.2
	1975	300	267	91.1	32	12.0	10.9
	1976	300	263	89.8	16	6.1	5.5

(continued)

TABLE 21 (continued)

ARCHERY (cont'd)							
Area	Year	Quota Of Hunters	Actual Hunters	Hunters Per Sq. Mi.	No. Of Deer Harvested	% Hunter Success	Harvest Per Sq. Mi.
Drury	1977	300	274	93.5	19	6.9	6.5
	1978	300	265	90.4	21	7.9	7.2
Knob Noster (3,600 acres)	1969	500	416	74.0	40	9.6	7.1
	1970	500	426	75.8	37	8.7	6.6
	1971	600	520	92.4	44	8.5	7.8
	1972	600	539	95.9	29	5.4	5.2
	1973	600	500	88.8	28	5.6	5.0
	1974	500	435	66.6	24	5.5	3.7
	1975	500	435	77.3	43	9.9	7.6
	1976	500	426	75.8	19	4.5	3.4
	1977	500	452	80.4	23	5.1	4.1
	1978	250	190	33.8	13	6.8	2.3
Busch Area	1975	500/Day	2805 Daily Tags	--	51	--	--
	1976	500/Day	750 Actual Hunters	--	37	4.9	--
	1977	500/Day	1750 Daily Tags	--	51	--	--
	1978	300/Day	1922 Daily Tags	--	49	6.1	--
Sugar Creek	1976	100	91	22.4	6	6.6	1.5
	1977	100	95	23.3	5	5.3	1.2

*Bucks-only

APPENDIX A. Summary of Hunting Pressure, 1978 Firearms Season
(Based on 3.79% Sample of 246,803 Firearms Permits Sold)^a

Management Unit	Sq. Mi. Of Forest	Number Hunters	Hunters Per Forested Sq. Mi.		Trips Per Forested Sq. Mi.	DISTRIBUTION OF SAMPLE	
						Number	Percent
1	315	3,759	11.9	15,438	49.0	154	1.6
2	591	6,398	10.8	24,260	41.0	263	2.8
3	505	7,838	15.5	28,977	57.4	324	3.5
4	708	12,721	18.0	47,328	66.8	525	5.6
5	1,192	11,842	9.9	48,015	40.3	493	5.3
6	615	5,712	9.3	21,627	35.2	228	2.4
7	625	2,667	4.3	8,872	14.2	107	1.1
8	1,188	12,724	10.7	50,259	42.3	506	5.4
9	644	6,036	9.4	20,305	31.5	238	2.5
10	1,442	22,220	15.4	88,018	61.0	876	9.4
11	252	3,416	13.6	12,598	50.0	134	1.4
12	1,412	11,697	8.3	43,780	31.0	464	5.0
13	1,886	20,292	10.8	75,844	40.2	811	8.7
14	1,233	16,062	13.0	60,084	48.7	629	6.7
15	1,990	16,787	8.4	67,082	33.7	660	7.0
16	849	9,334	11.0	40,740	48.0	365	3.9
17	326	2,663	8.2	9,219	28.3	105	1.1
18	721	4,808	6.7	17,092	23.7	195	2.1
19	1,863	10,756	5.8	44,458	23.9	437	4.7
20	3,057	22,858	7.5	91,064	29.8	932	10.0
21	2,675	18,662	7.0	76,516	28.6	755	8.1
22	2,382	17,450	7.3	71,983	30.2	688	7.4
23	285	1,318	4.6	4,568	16.0	52	0.6
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Unknown Unit	--	17,108	--	--	--	697	7.5
2 or More Units	--	29,773	--	--	--	1,173	12.5
<hr/>							
STATEWIDE	26,756	232,580 ^b	8.7	1,039,916	38.9	9,355 ^c	126.3 ^d
<hr/>							
Quota Units	11,617	113,689	9.8	475,999	40.9	4,500	48.1
<hr/>							
Four-Day Any-Deer Units	1,900	23,401	12.3	95,343	50.2	972	10.4
<hr/>							
One-Day Any-Deer Units	9,210	68,272	7.4	292,799	31.8	2,764	29.5
<hr/>							
Bucks-Only Units	4,029	25,963	6.4	104,182	25.8	1,046	11.2

- a. Includes both resident and non-resident hunters. Excludes farmer-hunters.
b. Total license sales minus calculated number not hunting. 5.8% of permittees did not hunt.
c. Total responses.
d. Total is greater than 100% because of multiple-unit hunters.

APPENDIX B. Harvest Summary, 1978 Firearms Deer Season
(Based on 3.79% of Sample of 246,803 Firearms Permits Sold)

Management Unit	Sq. Mi. Of Forest	CHECK STATION DATA						MAIL SURVEY DATA ^a				MAIL SURVEY ADJ. TO 100% RESPONSE ^a			
		HARVEST			Harvest Per Forested Sq. Mi.	Trips Per Deer ^a	Percent Success ^a	Harvest	Sq. Mi.	Trips Per Deer	Percent Success	Harvest	Sq. Mi.	Trips Per Deer	Percent Success
		Permittee	Farmer	Total											
1	315	460	23	483	1.5	32.0	12.2	605	1.9	25.5	16.1	448	1.4	34.5	11.9
2	591	1,224	91	1,315	2.2	18.4	19.1	1,126	1.9	21.5	17.6	1,194	2.0	20.3	18.7
3	505	1,548	143	1,691	3.3	17.1	19.7	2,197	4.4	13.2	28.0	1,509	3.0	19.2	19.2
4	708	3,709	433	4,142	5.8	11.4	29.2	4,274	6.0	11.1	33.6	3,616	5.1	13.1	28.4
5	1,192	4,377	427	4,804	4.0	1.0	37.0	3,629	3.0	13.2	30.6	4,268	3.6	11.2	36.0
6	615	644	70	714	1.2	30.3	11.3	529	0.9	40.1	9.3	628	1.0	34.4	11.0
7	625	293	37	330	0.5	26.9	11.0	322	0.5	27.6	12.1	286	0.5	31.0	10.7
8	1,188	876	231	1,107	0.9	45.4	6.8	1,934	1.6	26.0	15.2	854	0.7	58.8	6.7
9	644	562	166	728	1.1	27.9	9.3	1,179	1.8	17.2	19.5	548	0.8	37.0	9.1
10	1,442	4,952	920	5,872	4.1	15.0	22.3	5,060	3.5	17.4	22.8	4,829	3.3	18.2	21.7
11	252	323	63	386	1.5	32.6	9.5	400	1.6	31.5	11.7	315	1.2	40.0	9.2
12	1,412	1,713	435	2,148	1.5	20.4	14.6	1,978	1.4	22.1	16.9	1,670	1.2	26.2	14.3
13	1,886	1,450	348	1,798	1.0	42.2	7.1	2,881	1.5	26.3	14.2	1,414	0.7	53.6	7.0
14	1,233	1,343	451	1,794	1.4	33.5	8.4	2,189	1.8	27.4	13.6	1,310	1.1	45.9	8.2
15	1,990	949	70	1,019	0.5	65.8	5.6	1,874	0.9	35.8	11.2	925	0.5	72.5	5.5
16	849	1,151	292	1,443	1.7	28.2	12.3	1,225	1.4	33.2	13.1	1,122	1.3	36.3	12.0
17	326	182	18	200	0.6	46.1	6.8	441	1.4	20.9	16.6	178	0.5	51.8	6.7
18	721	189	109	298	0.4	57.4	3.9	374	0.5	23.7	7.8	184	0.3	93.0	3.8
19	1,863	1,721	158	1,879	1.0	23.7	16.0	1,462	0.8	30.4	13.6	1,678	0.9	26.5	15.6
20	3,057	4,197	589	4,786	1.6	19.0	18.4	3,236	1.1	28.1	14.2	4,092	1.3	22.2	17.9
21	2,675	1,389	110	1,499	1.8	51.0	7.4	1,850	0.7	41.4	9.9	1,354	0.5	56.5	7.3
22	2,382	1,695	116	1,811	0.8	39.7	9.7	1,890	0.8	38.1	10.8	1,653	0.7	43.5	9.5
23	285	14	0	14	0.0	326.3	1.1	130	0.4	35.1	9.9	14	0.1	326.0	1.1
Unknown	--	--	--	--	--	--	--	1,948	--	--	--	--	--	--	--
STATEWIDE	26,756	34,961	5,300	40,261	1.5	25.8	15.0	42,733	1.6	24.3	18.4	34,089	1.3	30.5	14.7
Quota Units	11,617	13,508	3,085	16,593	1.4	28.7	11.9	19,094	1.6	24.9	16.8	13,171	1.1	36.1	11.6
4-Day AD Units	1,900	8,086	860	8,946	4.7	10.6	34.6	7,903	4.2	12.1	33.8	7,884	4.1	12.1	33.7
1-Day AD Units	9,210	10,053	1,049	11,102	1.2	26.4	14.7	10,299	1.1	28.4	15.1	9,802	1.0	29.9	14.4
Bucks-Only Units	4,029	3,314	306	3,620	0.9	28.8	12.8	3,489	0.9	29.9	13.4	3,232	0.8	32.2	12.4

a. Permittees only.

APPENDIX C. Missouri Deer Harvests, Firearms, 1944-1978

Year	Season Dates	BUCKS-ONLY		ANY-DEER		Harvest By Firearms	Firearms Permits
		Counties	Days	Counties	Days		
1944	Nov. 3-4	20	2	--	--	583	7,557
1945	Nov. 1-3	21	3	--	--	882	11,196
1946	Nov. 1-2	21	2	--	--	743	15,079
1947	Nov. 6-8	25	3	--	--	1,387	17,747
1948	Dec. 6-10	25	4	--	--	1,432	20,708
1949	Dec. 6-10	25	4	--	--	1,353	19,103
1950	Nov. 27-Dec. 2	26	6	--	--	1,623	18,749
1951	Nov. 5-7	17	3	15	3	5,519	30,237
1952	Dec. 4-6	19	3	23	3	7,466	37,791
1953	Nov. 5-7	6	3	41	3	7,864	45,015
1954	Nov. 3-6	12	4	44	4	7,648	45,889
1955	Nov. 1-5	8	5	53	5	7,988	48,524
1956	Oct. 30-Nov. 3	9	5	54	5	7,864	49,108
1957	Nov. 5-9	13	5	50	5	9,986	49,907
1958	Nov. 17-22	13	6	50	6	13,610	59,392
1959	Nov. 16-21	60	6	54	6	16,306	68,282
1960	Nov. 15-21	61	7	53	7	17,418	85,931
1961	Nov. 15-21	60	7	54	7	15,967	90,346
1962	Nov. 15-21	22	7	92	7	16,516	102,785
1963	Nov. 15-21	59	7	55	7	17,304	105,501
1964	Nov. 13-19	20	7	94	7	20,619	121,713
1965	Nov. 15-21	60	7	54	7	18,785	110,093
1966	Nov. 12-18	29	7	85	7	27,965	130,642
1967	Nov. 18-22	51	5	63	5	22,802	150,105
1967	Dec. 1-3	Statewide	3				
1968	Nov. 16-19	32	4	82	4	22,090	159,262
1968	Nov. 30-Dec. 7	Statewide	8				
1969	Nov. 15-24	67	10	47	4	23,265	144,436
1970	Nov. 14-23	Unit System	10	Unit System		28,400	164,074
1971	Nov. 13-21	Unit System	9	Unit System		31,722	172,299
1972	Nov. 18-26	Unit System	9	Unit System		30,084	186,708
1973	Nov. 17-25	Unit System	9	Unit System		33,438	210,770
1974	Nov. 16-24	Unit System	9	Unit System		29,262	213,191
1975	Nov. 15-23	Unit System	9	Unit System		51,823	234,471
1976	Nov. 13-21	Unit System	9	Unit System		40,683	232,765
1977	Nov. 19-27	Unit System	9	Unit System		36,562	250,192
1978	Nov. 18-26	Unit System	9	Unit System		40,261	246,803

TOTALS						617,220	3,656,371
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APPENDIX D. Missouri Deer Harvests, Archery, 1946-1978

Year	Season Dates	COUNTIES OPEN		Total	PERMIT SALES		Harvest
		Bucks-Only	Any-Deer		Resident	Non-Resident	
1946	Oct. 24-26	1	--	73	73	--	--
1947	Oct. 28-Nov. 1	1	--	39	39	--	--
1948	Nov. 29-Dec. 4	1	--	62	62	--	--
1949	Nov. 26-Dec. 4	1	--	54	54	--	--
1950	Nov. 13-22	1	--	64	64	--	1
1951	Oct. 22-24	--	1	77	77	--	--
1952	Oct. 16-31	--	5	214	214	--	2
1953	Oct. 16-31	--	41	481	481	--	5
1954	Oct. 1-31	--	44	1,053	1,053	--	22
1955	Oct. 1-31	8	53	1,506	1,506	--	37
1956	Oct. 1-31	9	54	2,075	2,075	--	33
1957	Oct. 1-Nov. 30	13	50	2,720	2,563	157	58
1958	Oct. 1-Dec. 15	13	50	3,670	3,475	195	71
1959	Oct. 1-Dec. 15	50	54	4,495	4,221	274	90
1960	Oct. 1-Dec. 15	51	53	4,468	4,152	316	263**
1961	Oct. 1-Dec. 15	50	54	5,190	4,850	340	116
1962	Oct. 1-Dec. 15	12	92	6,035	5,736	299	231
1963	Oct. 1-Dec. 15		Statewide	7,324	6,974	350	268
1964	Oct. 1-Dec. 15		Statewide	9,559	9,169	390	316
1965	Oct. 1-Dec. 15		Statewide	10,756	10,381	375	371
1966	Oct. 1-Dec. 15		Statewide	11,878	11,489	389	458
1967	Oct. 1-Dec. 15		Statewide	13,561	13,121	440	380
1968	Oct. 1-Dec. 31		Statewide	15,510	14,924	586	559
1969	Oct. 1-Dec. 31		Statewide	14,709	14,202	507	619
1970	Oct. 1-Dec. 31		Statewide	16,950	16,478	472	828
1971	Oct. 1-Dec. 31		Statewide	17,840	17,413	427	962
1972	Oct. 1-Dec. 31		Statewide	21,493	20,841	652	1,130
1973	Oct. 1-Nov. 16		Statewide	25,254	24,508	746	1,285
	Nov. 26-Dec. 31						
1974	Oct. 1-Nov. 15		Statewide	27,871	27,015	856	1,437
	Nov. 25-Dec. 31						
1975	Oct. 1-Nov. 14		Statewide	29,974	28,948	1,026	1,850
	Nov. 24-Dec. 31						
1976	Oct. 1-Nov. 12		Statewide	31,281	30,098	1,183	1,973
	Nov. 22-Dec. 31						
1977	Oct. 1-Nov. 18		Statewide	33,239	31,932	1,307	2,199
	Nov. 28-Dec. 31						
1978	Oct. 1-Nov. 17		Statewide	34,368	33,197	1,171	2,781
	Nov. 27-Dec. 31						
TOTAL				353,843	341,565	12,458	18,345

* One deer archery - one deer gun legal since 1961.

** Includes 136 deer from special archery hunt in Knob Noster State Park.

APPENDIX E. Sex and Age Composition of 1978 Deer Harvest Sample

Mgmt. Unit	FAWN		1½		2½		3½		4½		5½		6½		7½		ADULTS		Total Deer
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
2	43	26	2	17	4	15	1	6	0	3	0	3	0	0	0	0	5	27	120
3	39	32	4	9	5	17	1	11	0	1	0	2	0	1	0	0	6	32	122
4	195	144	69	110	25	88	7	63	1	19	0	13	0	2	0	2	33	187	738
5	127	87	36	53	10	66	1	32	0	5	0	0	0	3	0	0	11	106	420
8	14	5	53	3	17	9	5	2	2	1	1	0	0	0	0	0	25	12	112
9	1	2	9	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	15
10	38	43	226	34	97	42	12	15	2	12	0	4	0	2	0	1	111	76	528
12	15	14	120	15	18	8	23	9	4	0	0	0	0	0	0	1	45	18	227
13	20	10	130	10	17	9	40	5	8	2	4	1	0	1	0	0	69	18	257
14	12	12	92	9	38	13	18	7	4	0	1	4	3	0	0	1	64	25	214
15	3	6	72	1	18	5	19	2	7	3	4	1	1	0	0	0	49	11	142
16	20	14	195	17	33	11	24	12	4	5	2	2	0	1	0	0	63	31	340
18	3	6	44	5	11	3	9	0	0	1	1	1	0	0	0	0	21	5	84
20	43	56	49	35	11	29	5	14	1	8	0	3	0	2	0	1	17	57	257
21	11	14	5	6	3	5	3	4	0	2	0	0	1	1	0	0	7	12	55
22	17	12	10	8	0	11	0	4	0	0	0	1	1	1	0	0	1	17	65
TOTAL	601	483	1116	332	311	331	168	186	33	62	13	35	6	14	0	6	531	634	3697

Job No. 3: Deer season recommendations

Objective: To annually recommend deer season regulations.

Procedure:

Productivity data will be gathered and combined with population trend and harvest data to simulate deer population structure through computer modeling. Fetus counts will be made on road kills during winter to determine productivity by region of the state. A computer program will be used to project the effects of various season alternatives on population size. This information will be used to make annual deer season recommendations.

Management Units

A management unit system of zoning was first used in Missouri in 1970 when 10 units were established. Between 1970 and 1977, two units were split and minor boundary adjustments were made. It was apparent, however, that major revision was necessary because of increasing hunter pressure and habitat loss.

A forest cover map of Missouri was prepared from LANDSAT Photography by Forestry Division in summer, 1977. This cover map was used as the basis for 23 management units in 1978. Major highways served as boundaries wherever possible. Regulations for 1979 were established using these 23 units (Figure 1).

Four basic season strategies were recommended within a 9-day season framework (Nov. 17-25): bucks-only, one-day delayed any-deer, four-day delayed any-deer, and quotas on any-deer permits (Figure 1). Bucks-only seasons were recommended in Units 1,6,7,21,22,23 because of limited habitat or depleted deer populations. One-day delayed either-sex seasons were recommended in Units 2,3,19 and 20 where continued herd growth was desirable. A four-day delayed either-sex season was recommended for Units 4 and 5 to stabilize herd growth. Quotas of any-deer permits were recommended for remaining units for more precise control of female harvest. Recommended quotas of any-deer permits by unit and desired female harvest were as follows:

Unit	Quota	Desired Female Harvest	Unit	Quota	Desired Female Harvest
8	700	300	13	1,600	600
9	300	150	14	900	500
10	6,500	2,500	15	1,700	400
11	275	100	16	825	350
12	2,200	800	17	300	100
			18	500	150

Procedures (cont'd):

Quotas on non-resident hunters in 1978 resulted in a satisfactory distribution of non-residents. Identical quotas are recommended for the 1979 season.

Management Unit	Non-Resident Hunter Quota
2	340
3	360
4	480
5	680

Seasons recommended for 1979 will allow herd growth where necessary and stabilize growth elsewhere. Increasing use of quotas will be recommended in future years because of their success in controlling female harvest.

Productivity

Productivity information (corpora lutea counts) for Missouri deer was first gathered during the 1950's (Dunkeson 1958). Although these data provided a firm basis for productivity estimates, current use of the information might be hazardous because of changes in deer density and habitat quality.

Updating of these data was begun in 1978. Road killed females were examined by Conservation Agents in northeastern and east central Missouri. Fetuses were counted and sexed and primary incisors extracted from the doe. Age analysis by cementum annuli counts was done by Matson's Commercial Microtechnique, Milltown, Montana.

We are processing our own incisors in 1979. Age information and productivity data are not yet available.

Population Modeling

Due to a manpower shortage in 1979, population modeling has not been completed.

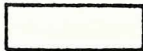
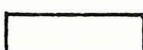

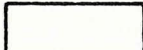
Literature Cited:

- Dunkeson, R.L. 1958. A study of deer productivity and breeding season. Federal Aid Proj. No. 13-R-12. Work Plan No. 1, Job No. 5, 13pp.
- Gilbert, F.F. 1966. Aging white-tailed deer by annuli in the cementum of the first incisor. J. Wildl. Manage. 30(1):200-202.
- Lockard, G.R. 1972. Further studies of dental annuli for aging white-tailed deer. J. Wildl. Manage. 36(1):46-55.
- Low, W.A. and I. McT. Cowan. 1963. Age determination of deer by annular structure of dental cementum. J. Wildl. Manage. 27(3):466-471.

FIGURE 1.

DEER MANAGEMENT UNITS 1979

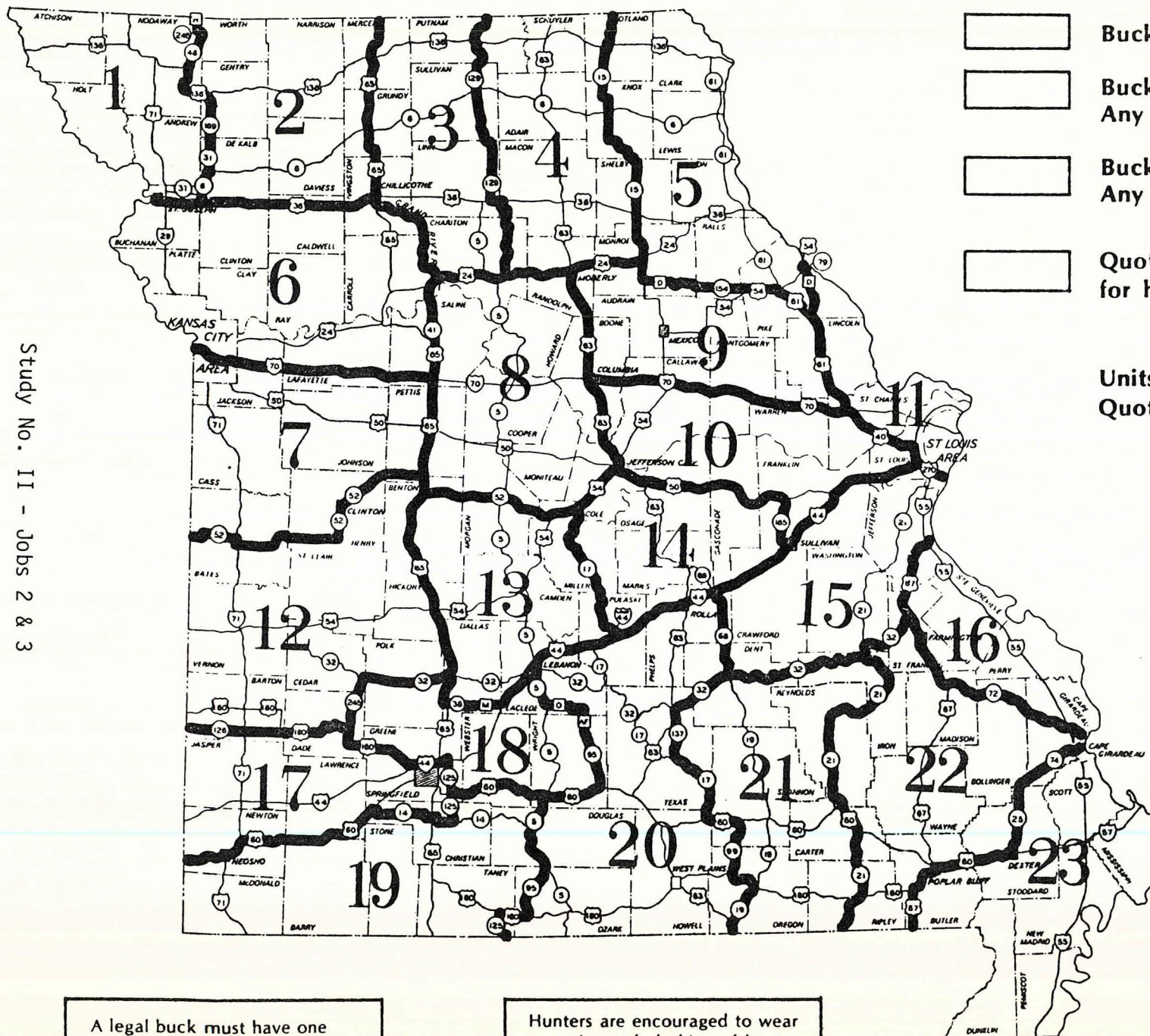
1979 Firearms Regulations

-  Bucks Only — Nov. 17-25
-  Bucks Only — Nov. 17-23, 25
Any Deer — Nov. 24
-  Bucks Only — Nov. 17-21
Any Deer — Nov. 22-25
-  Quota Units (Bucks only except for holders of Any Deer Permits)

Units 2, 3, 4 and 5 are Non-Resident Quota Units.

QUOTA UNITS Number Any Deer Permits

- Unit 8 - 700
- Unit 9 - 300
- Unit 10 - 6,500
- Unit 11 - 275
- Unit 12 - 2,200
- Unit 13 - 1,600
- Unit 14 - 900
- Unit 15 - 1,700
- Unit 16 - 825
- Unit 17 - 300
- Unit 18 - 500



A legal buck must have one antler at least three inches long.

Hunters are encouraged to wear some item of clothing of hunter orange color.

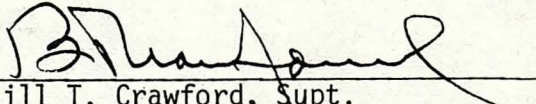
Data and Reports:

Original data and related reports in this investigation are on file in the Federal Aid Office of the Missouri Department of Conservation, Columbia, Missouri 65201.

Prepared By:

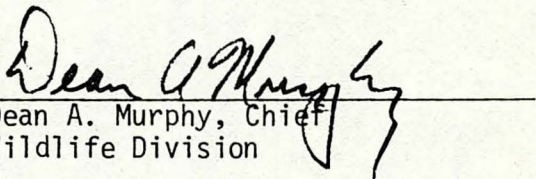
Norb Giessman
&
Wayne R. Porath
Project Leaders

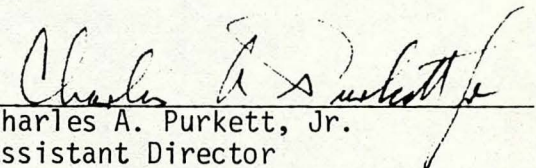
Approved By:


Bill T. Crawford, Supt.
Wildlife Research Section

Date:

October 24, 1979


Dean A. Murphy, Chief
Wildlife Division


Charles A. Purkett, Jr.
Assistant Director